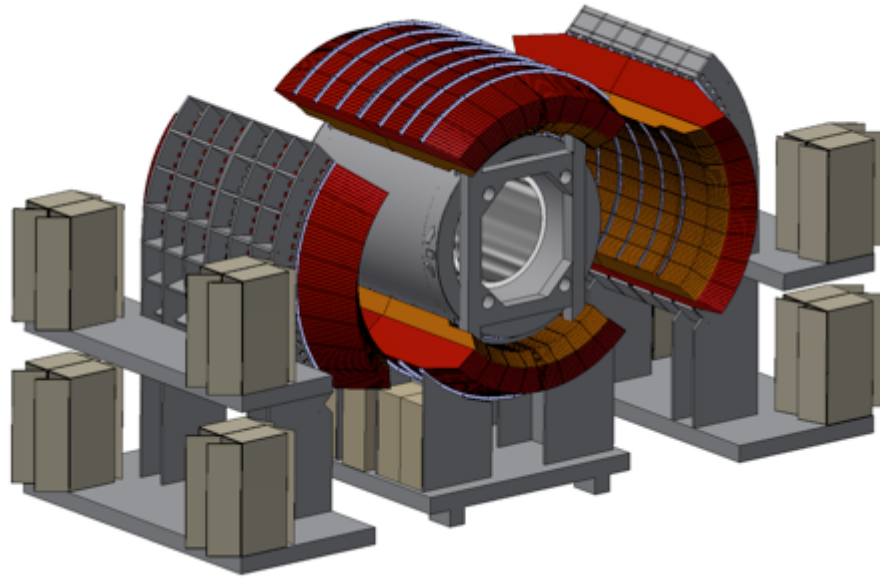


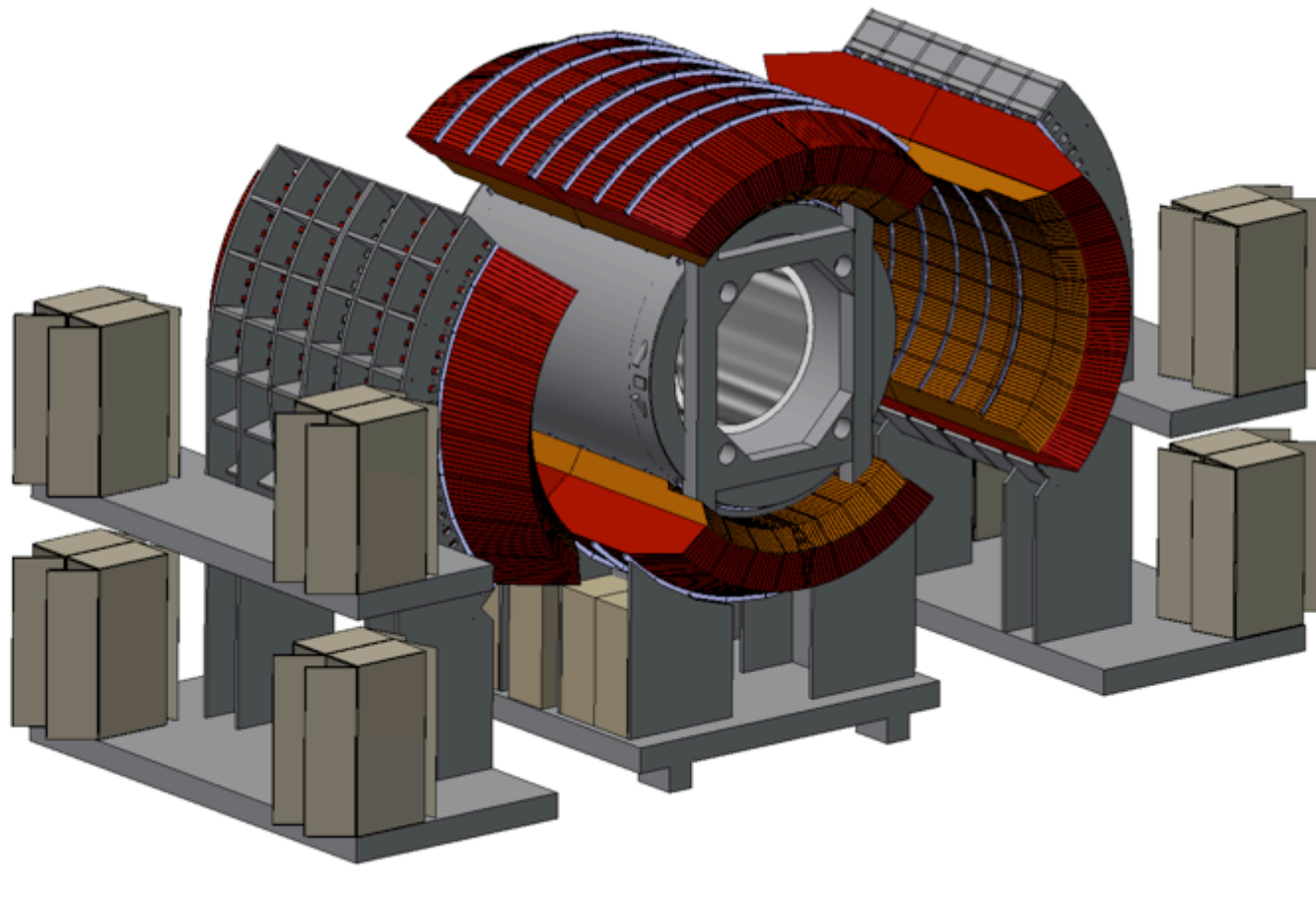
sPHENIX

Project Engineering



D. Lynch, R. Ruggiero
May 22, 2014

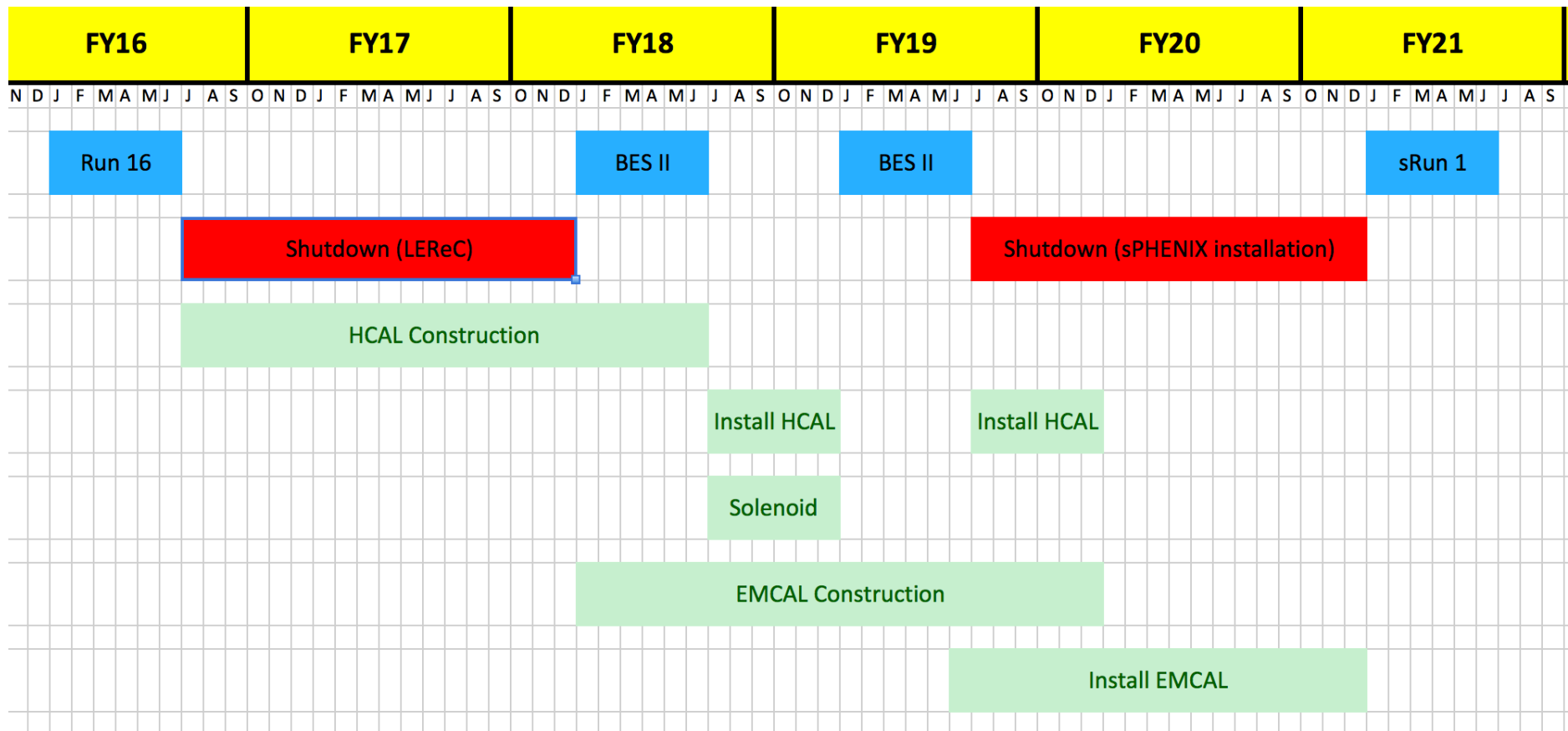
sPHENIX Concept



May 22, 2014

sPHENIX Mechanical Design

sPHENIX schedule



Desirable to have whole HCal installed prior to
 May 22, 2014
 Run-19

sPHENIX Mechanical Design

sPHENIX activities

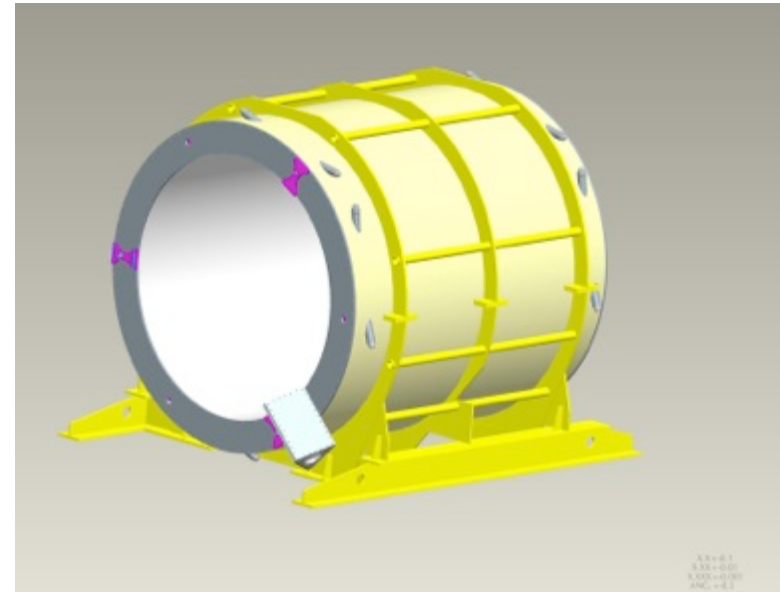
- March 10-12 BNL Review
- March 28 Final BNL Review report
- March 31-April 4 Livermore Workfest
- April 2 SMD/CAD SLAC visit on solenoid
- April 24 Electronics meeting at Nevis
- April 24-25 NSAC LRP schedule announced
- May 1 Forward sPHENIX whitepaper submitted to BNL
- May 2 Science review scheduled
- May 12 Today's first PMG meeting
- June 3 PHENIX science review rehearsal
- June 10 BNL science review
- July 1-2 DOE science review
- April 2015 LRP Resolution Meeting
- October 2015 Final LRP

May 22, 2014

sPHENIX Mechanical Design

Magnet (BABAR) (Magnet Div)

- Acquire rights Done
- Evaluate Transport Done
- Design Transport fixtures Done
- Fabricate Transport Fixtures 6/15/14
- Evaluate BNL test facility requirements 8/1/14
- Prepare test facility 9/1/14
- Install Transport fixtures 9/1/14
- Transport to BNL 9/15/14
- Install in test facility 10/1/14
- Design tests/test equipment 10/1/14
- Fabricate/procure test equipment 1/1/15
- Run tests 6/1/15
- Design Magnet modifications 12/1/14
- Fabricate magnet modifications 6/1/15
- Install magnet modifications 8/1/15
- Evaluate final installation 9/1/15
- Design installation support equipment 12/31/2015
- Fabricate/procure support equipment 7/1/2018
- Transport to IR 6/10/2019
- Install 8/30/2019
- Test 10/25/2019
- Commission 11/22/2019



May 22, 2014

sPHENIX Mechanical Design

Meeting yesterday with Mag Div. to finalize magnet transportation:

SMD has agreed to these tasks:

- moving the magnet
- cold testing it
- putting some modest current through it and organizing the testing
- designing modifications to the stack assembly as determined by sPHENIX\

Mike Anarella will manage these tasks.

Action item #1 In 2 weeks sPHENIX will provide an envelope drawing which can be used to estimate the cost of modifying the stack.

Action item #2 Mike will make a simple high level project file with the tasks that SMD will take leadership on by late June or early July.

-

Action item #3 The goal should be to have a Magnet Transport contract in place by July 1. Paul Kovach discussed preparations for the magnet move. The thermal shield restraints are in central shops being estimated and built. He has had some difficulty with PPM getting quotes for the move.

Regular sPHENIX Magnet meetings will take place on Wednesdays at 1pm. Next meeting in two weeks on June4.

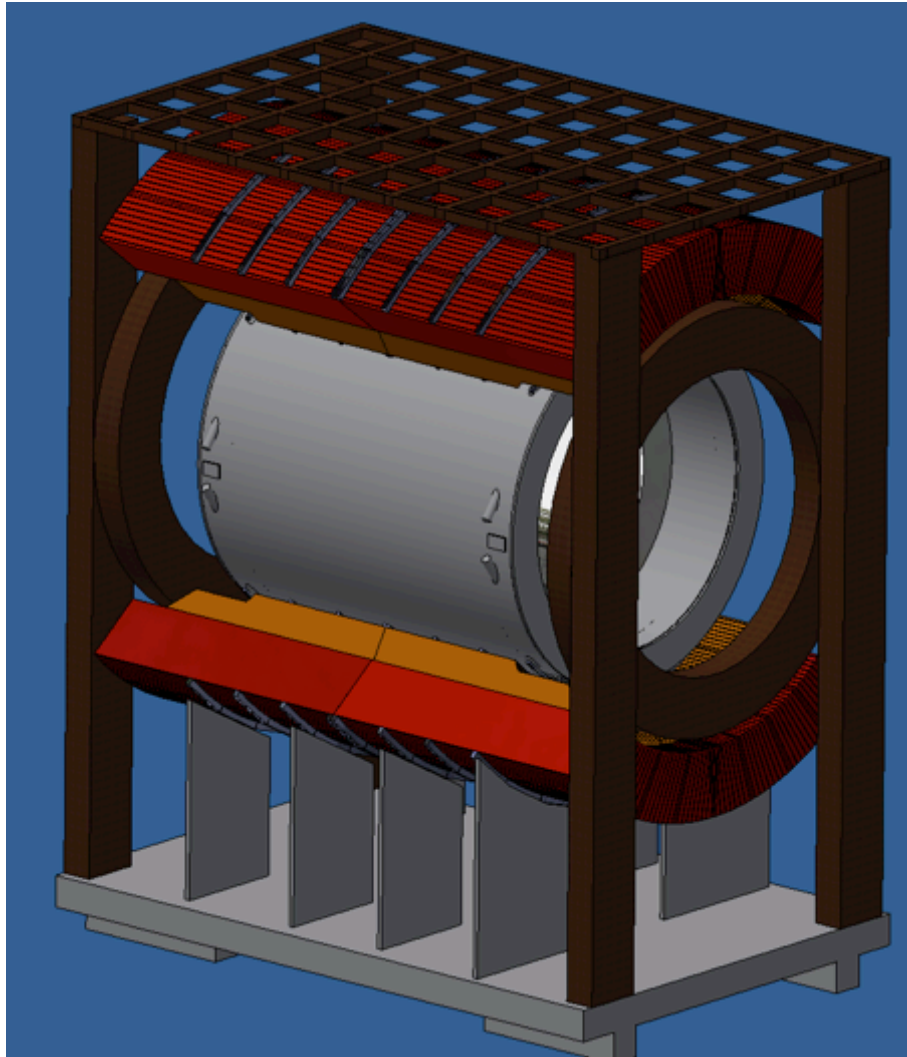
sPHENIX Engineering:

Major Subsystems/Subtopics:

• Magnet (BABAR) (Magnet Div)	start 2/1/14 - 12/31/2018
• Hadronic Calorimeter (HCAL) (PHENIX)	start 2/1/14 - 12/31/2020
• EM Calorimeter EMCal (PHENIX)	start 2/1/14 - 12/31/2020
• VTX (RIKEN)	start 2/1/14 - 12/31/2020
• DIRC (?)	start ? - 12/31/2020
• VTX additional layers (RIKEN)	start ? - 12/31/2020
• Carriage Support structure (PHENIX)	start 2/1/14 - 12/31/2020
• Readout Electronics (PHENIX)	start 2/1/14 - 12/31/2020
• Infrastructure (PHENIX ++)	
• Electrical Power Services (PHENIX)	start ? - 12/31/2017
• Instrumentation Support (Signal trays & Racks) (PHENIX)	start ? - 12/31/2020
• Cryo Services (CAD)	start 2/1/14 – 8/1/2018
• Cooling water (CAD)	start ? - 12/31/2017
• Safety Systems (PHENIX)	start ? - 12/31/2020
• Work Platforms and Access/Egress Structures (CAD)	start ? - 12/31/2017
• HVAC (CAD)	start ? - 12/31/2017
• PHENIX Decommissioning (CAD, PHENIX)	start ? - 6/30/2017
• System Integration (PHENIX)	start 2/1/14 - 12/31/2020
• Testing (PHENIX)	start 2/1/14 - 12/31/2020
• Installation (PHENIX, CAD)	start 2/1/14 - 12/31/2020
• Commissioning (PHENIX)	start 2/1/14 - 12/31/2020

May 22, 2014

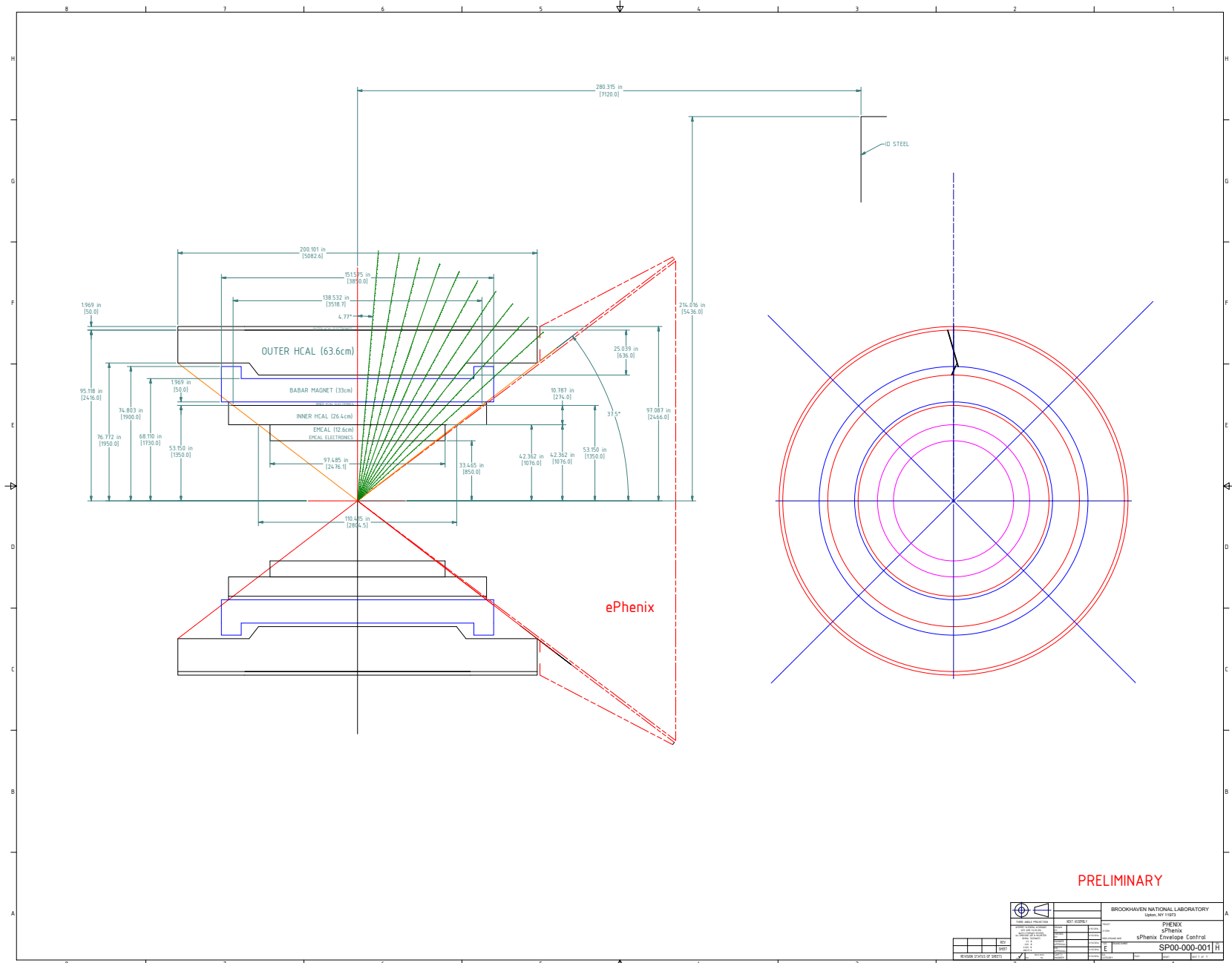
sPHENIX Mechanical Design



Alternate Central Pedestal
support Concept

May 22, 2014

sPHENIX Mechanical Design



May 22, 2014

sPHENIX Mechanical Design

		BROOKHAVEN NATIONAL LABORATORY Upton, NY 11973	
PROJECT: sPHENIX DRAWING: sPHENIX Envelope Control DATE: 5/22/14 DESIGNED BY: [Signature] CHECKED BY: [Signature] APPROVED BY: [Signature]		PROJECT: sPHENIX DRAWING: sPHENIX Envelope Control DATE: 5/22/14 DESIGNED BY: [Signature] CHECKED BY: [Signature] APPROVED BY: [Signature]	
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Hadronic Calorimeter (HCAL) (PHENIX)

- | | |
|---|---------------|
| • Conceptual design options | 4/1-5/1/14 |
| • tradeoff studies innie vs outie including cost estimates | 5/1-11/1/14 |
| • initial prototype(s) | 11/1-12/1/14 |
| • final design concept | 3/1/15 |
| • production estimates | 4/1/15 |
| • Production prototype design/drawings (single module) | 7/1/15 |
| • production prototype tools, techniques, procedures and fixtures | 9/1/15 |
| • production prototype test planning | 10/1/15 |
| • production prototype fabrication & procurement | 11/1/15 |
| • production prototype test(s) | 2/1/16 |
| • assembly final design | 4/1/16 |
| • assembly tools, techniques, procedures and fixtures | 6/1/16 |
| • assembly fabrication & procurement | 12/1/16 |
| • assembly planning | 12/1/16 |
| • final assembly of all modules | 12/1/17-12/19 |
| • acceptance/qualification testing | 2/1/17-1/1/20 |

EM Calorimeter EMCal (PHENIX) (Need level 2 and engineering Manager)

- Conceptual design options 5/1/14
- tradeoff studies innie vs outie including cost estimates 11/1/14
- initial prototype(s) 2/1/15
- final design concept 1/1/16
- production estimates 1/12/16
- Production prototype design/drawings (single module) 5/1/16
- production prototype tools, techniques, procedures and fixtures 8/1/16
- production prototype test planning 8/1/16
- production prototype fabrication & procurement 12/1/16
- production prototype test(s) 2/1/17
- assembly final design 5/1/17
- assembly tools, techniques, procedures and fixtures 8/1/17
- assembly fabrication & procurement 1/1/18
- assembly planning 1/1/18
- final assembly of all modules 1/1/20
- acceptance/qualification testing 1/1/20

VTX (RIKEN)

Conceptual design options

- tradeoff studies innie vs outie including cost estimates
- initial prototype(s)
- final design concept
- production estimates
- Production prototype design/drawings (single module)
- production prototype tools, techniques, procedures and fixtures
- production prototype test planning
- production prototype fabrication & procurement
- production prototype test(s)
- assembly final design
- assembly tools, techniques, procedures and fixtures
- assembly fabrication & procurement
- assembly planning
- final assembly of all modules 1/1/2020
- acceptance/qualification testing 1/1/2020

Infrastructure: SULI Student this summer task plan:

The efforts to be undertaken by the SULI summer student working on this project include planning for the logistics involved, analysis and design documentation of existing PHENIX infrastructure and initial layouts for sPHENIX. Student will work closely with PHENIX and RHIC engineers and designers to achieve these goals.

PHENIX Decommissioning: SULI Student this summer task plan:

The efforts to be undertaken by the SULI summer student working on this project include organizing and planning work procedures for decommissioning the various PHENIX detectors and related support subsystems .

All involved in sPHENIX should make sure they have an up to date RCF account so that they can access the PHENIX Calendar and all meeting slides and to access the PHENIX drawings and Illustrations folders at:

<https://www.phenix.bnl.gov/WWW/p/draft/donlynch/sPHENIXfigures/>

